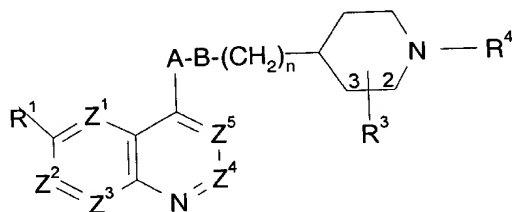


### Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A method of treatment of bacterial infections in mammals, which method comprises the administration to a mammal in need of such treatment of an effective amount of a compound of formula (I) or a pharmaceutically acceptable derivative thereof:



(I)

wherein:

one of Z<sup>1</sup>, Z<sup>2</sup>, Z<sup>3</sup>, Z<sup>4</sup> and Z<sup>5</sup> is N or CR<sup>1a</sup> and the remainder are CH;

R<sup>1</sup> is selected from hydroxy; (C<sub>1-6</sub>) alkoxy optionally substituted by (C<sub>1-6</sub>)alkoxy, amino, piperidyl, guanidino or amidino optionally N-substituted by one or two (C<sub>1-6</sub>)alkyl, acyl or (C<sub>1-6</sub>)alkylsulphonyl groups, NH<sub>2</sub>CO, hydroxy, thiol, (C<sub>1-6</sub>)alkylthio, heterocyclylthio, (C<sub>1-6</sub>)alkylsulphonyl groups, NH<sub>2</sub>CO, hydroxy, thiol, (C<sub>1-6</sub>)alkylthio, heterocyclylthio, heterocyclyloxy, arylthio, aryloxy, acylthio, acyloxy or (C<sub>1-6</sub>)alkylsulphonyloxy; (C<sub>1-6</sub>)alkoxy-substituted (C<sub>1-6</sub>)alkyl; halogen; (C<sub>1-6</sub>)alkyl; (C<sub>1-6</sub>)alkylthio; trifluoromethyl; nitro; azido; acyl; acyloxy; acylthio; (C<sub>1-6</sub>)alkylsulphonyl; (C<sub>1-6</sub>)alkylsulphoxide; arylsulphonyl; arylsulphoxide or an amino, piperidyl, guanidino or amidino group optionally N-substituted by one or two (C<sub>1-6</sub>)alkyl, acyl or (C<sub>1-6</sub>)alkylsulphonyl groups, or when one of Z<sup>1</sup>, Z<sup>2</sup>, Z<sup>3</sup>, Z<sup>4</sup> and Z<sup>5</sup> is N, R<sup>1</sup> may instead be hydrogen;

R<sup>1a</sup> is selected from hydrogen and the groups listed above for R<sup>1</sup>;

R<sup>3</sup> is in the 2- or 3-position and is:

carboxy; (C<sub>1-6</sub>)alkoxycarbonyl; aminocarbonyl wherein the amino group is optionally substituted by hydroxy, (C<sub>1-6</sub>)alkyl, hydroxy(C<sub>1-6</sub>)alkyl, aminocarbonyl(C<sub>1-6</sub>)alkyl, (C<sub>2-6</sub>)alkenyl, (C<sub>1-6</sub>)alkylsulphonyl, trifluoromethylsulphonyl, (C<sub>1-6</sub>)alkenylsulphonyl, (C<sub>1-6</sub>)alkoxycarbonyl, (C<sub>1-6</sub>)alkylcarbonyl, (C<sub>2-6</sub>)alkenylloxycarbonyl or (C<sub>2-6</sub>)alkenylcarbonyl and optionally further substituted by (C<sub>1-6</sub>)alkyl, hydroxy(C<sub>1-6</sub>)alkyl, aminocarbonyl(C<sub>1-6</sub>)alkyl or (C<sub>2-6</sub>)alkenyl; cyano; tetrazolyl; 2-oxo-oxazolidinyl optionally substituted by R<sup>10</sup>;

3-hydroxy-3-cyclobutene-1,2-dione-4-yl; 2,4-thiazolidinedione-5-yl; tetrazol-5-ylaminocarbonyl; 1,2,4-triazol-5-yl optionally substituted by R<sup>10</sup>; or 5-oxo-1,2,4-oxadiazol-3-yl; or

R<sup>3</sup> is in the 2- or 3-position and is (C<sub>1-4</sub>)alkyl or ethenyl substituted with any of the groups listed above for R<sup>3</sup> and 0 to 2 groups R<sup>12</sup> independently selected from:

thiol; halogen; (C<sub>1-6</sub>)alkylthio; trifluoromethyl; azido; (C<sub>1-6</sub>)alkoxycarbonyl; (C<sub>1-6</sub>)alkylcarbonyl; (C<sub>2-6</sub>)alkenyloxycarbonyl; (C<sub>2-6</sub>)alkenylcarbonyl; hydroxy optionally substituted by (C<sub>1-6</sub>)alkyl, (C<sub>2-6</sub>)alkenyl, (C<sub>1-6</sub>)alkoxycarbonyl, (C<sub>1-6</sub>)alkylcarbonyl, (C<sub>2-6</sub>)alkenyloxycarbonyl, (C<sub>2-6</sub>)alkenylcarbonyl or aminocarbonyl wherein the amino group is optionally substituted by (C<sub>1-6</sub>)alkyl, (C<sub>2-6</sub>)alkenyl, (C<sub>1-6</sub>)alkylcarbonyl or (C<sub>2-6</sub>)alkenylcarbonyl; amino optionally mono- or disubstituted by (C<sub>1-6</sub>)alkoxycarbonyl, (C<sub>1-6</sub>)alkylcarbonyl, (C<sub>2-6</sub>)alkenyloxycarbonyl, (C<sub>2-6</sub>)alkenylcarbonyl, (C<sub>1-6</sub>)alkyl, (C<sub>2-6</sub>)alkenyl, (C<sub>1-6</sub>)alkylsulphonyl, (C<sub>2-6</sub>)alkenylsulphonyl or aminocarbonyl wherein the amino group is optionally substituted by (C<sub>1-6</sub>)alkyl or (C<sub>2-6</sub>)alkenyl; aminocarbonyl wherein the amino group is optionally substituted by (C<sub>1-6</sub>)alkyl, hydroxy(C<sub>1-6</sub>)alkyl, aminocarbonyl(C<sub>1-6</sub>)alkyl, (C<sub>2-6</sub>)alkenyl, (C<sub>1-6</sub>)alkoxycarbonyl, (C<sub>1-6</sub>)alkylcarbonyl, (C<sub>2-6</sub>)alkenyloxycarbonyl or (C<sub>2-6</sub>)alkenylcarbonyl and optionally further substituted by (C<sub>1-6</sub>)alkyl, hydroxy(C<sub>1-6</sub>)alkyl, aminocarbonyl(C<sub>1-6</sub>)alkyl or (C<sub>2-6</sub>)alkenyl; oxo; (C<sub>1-6</sub>)alkylsulphonyl; (C<sub>2-6</sub>)alkenylsulphonyl; or (C<sub>1-6</sub>)aminosulphonyl wherein the amino group is optionally substituted by (C<sub>1-6</sub>)alkyl or (C<sub>2-6</sub>)alkenyl;

provided that when R<sup>3</sup> is disubstituted with hydroxy or amino and carboxy containing substituents these may optionally together form a cyclic ester or amide linkage, respectively; and provided that R<sup>3</sup> is other than (C<sub>1-4</sub>)alkyl or ethenyl substituted by (C<sub>1-6</sub>)alkoxycarbonyl or aminocarbonyl optionally substituted by (C<sub>1-6</sub>)alkyl, (C<sub>2-6</sub>)alkenyl, (C<sub>1-6</sub>)alkoxycarbonyl, (C<sub>1-6</sub>)alkylcarbonyl, (C<sub>2-6</sub>)alkenyloxycarbonyl or (C<sub>2-6</sub>)alkenylcarbonyl and optionally further substituted by (C<sub>1-6</sub>)alkyl, hydroxy(C<sub>1-6</sub>)alkyl, aminocarbonyl(C<sub>1-6</sub>)alkyl or (C<sub>2-6</sub>)alkenyl and 0 to 2 groups R<sup>12</sup>;

wherein R<sup>10</sup> is selected from (C<sub>1-4</sub>)alkyl; (C<sub>2-4</sub>)alkenyl; aryl; a group R<sup>12</sup> as defined above; carboxy; aminocarbonyl wherein the amino group is optionally substituted by hydroxy, (C<sub>1-6</sub>)alkyl, (C<sub>2-6</sub>)alkenyl, (C<sub>1-6</sub>)alkylsulphonyl, trifluoromethylsulphonyl, (C<sub>1-6</sub>)alkenylsulphonyl, (C<sub>1-6</sub>)alkoxycarbonyl, (C<sub>1-6</sub>)alkylcarbonyl, (C<sub>2-6</sub>)alkenyloxycarbonyl or (C<sub>2-6</sub>)alkenylcarbonyl and optionally further substituted by (C<sub>1-6</sub>)alkyl or (C<sub>2-6</sub>)alkenyl; cyano; or tetrazolyl;

R<sup>4</sup> is a group -CH<sub>2</sub>-R<sup>5</sup> in which R<sup>5</sup> is selected from:

(C<sub>3-12</sub>)alkyl; hydroxy(C<sub>3-12</sub>)alkyl; (C<sub>1-12</sub>)alkoxy(C<sub>3-12</sub>)alkyl; (C<sub>1-12</sub>)alkanoyloxy(C<sub>3-12</sub>)alkyl; (C<sub>3-6</sub>)cycloalkyl(C<sub>3-12</sub>)alkyl; hydroxy-, (C<sub>1-12</sub>)alkoxy- or (C<sub>1-</sub>

12)alkanoyloxy-(C<sub>3-6</sub>)cycloalkyl(C<sub>3-12</sub>)alkyl; cyano(C<sub>3-12</sub>)alkyl; (C<sub>2-12</sub>)alkenyl; (C<sub>2-12</sub>)alkynyl; tetrahydrofuryl; mono- or di-(C<sub>1-12</sub>)alkylamino(C<sub>3-12</sub>)alkyl; acylamino(C<sub>3-12</sub>)alkyl; (C<sub>1-12</sub>)alkyl- or acyl-aminocarbonyl(C<sub>3-12</sub>)alkyl; mono- or di- (C<sub>1-12</sub>)alkylamino(hydroxy) (C<sub>3-12</sub>)alkyl; optionally substituted phenyl(C<sub>1-2</sub>)alkyl, phenoxy(C<sub>1-2</sub>)alkyl or phenyl(hydroxy)(C<sub>1-2</sub>)alkyl; optionally substituted diphenyl(C<sub>1-2</sub>)alkyl; optionally substituted phenyl(C<sub>2-3</sub>)alkenyl; optionally substituted benzoyl or benzoylmethyl; optionally substituted heteroaryl(C<sub>1-2</sub>)alkyl; and optionally substituted heteroaroyl or heteroaroylmethyl;

n is 0, 1 or 2;

either A-B is NHC(O)NH or NHC(O)O, or

A is NR<sup>11</sup>, O, S(O)<sub>x</sub> or CR<sup>6</sup>R<sup>7</sup> and B is NR<sup>11</sup>, O, S(O)<sub>x</sub> or CR<sup>8</sup>R<sup>9</sup> where x is 0, 1 or 2 and wherein:

each of R<sup>6</sup> and R<sup>7</sup> R<sup>8</sup> and R<sup>9</sup> is independently selected from: H; thiol; (C<sub>1-6</sub>)alkylthio; halo; trifluoromethyl; azido; (C<sub>1-6</sub>)alkyl; (C<sub>2-6</sub>)alkenyl; (C<sub>1-6</sub>)alkoxycarbonyl; (C<sub>1-6</sub>)alkylcarbonyl; (C<sub>2-6</sub>)alkenyloxycarbonyl; (C<sub>2-6</sub>)alkenylcarbonyl; hydroxy, amino or aminocarbonyl optionally substituted as for corresponding substituents in R<sup>3</sup>; (C<sub>1-6</sub>)alkylsulphonyl; (C<sub>2-6</sub>)alkenylsulphonyl; or (C<sub>1-6</sub>)aminosulphonyl wherein the amino group is optionally substituted by (C<sub>1-6</sub>)alkyl or (C<sub>1-6</sub>)alkenyl;

or R<sup>6</sup> and R<sup>8</sup> together represent a bond and R<sup>7</sup> and R<sup>9</sup> are as above defined;

or R<sup>6</sup> and R<sup>8</sup> together represent -O- and R<sup>7</sup> and R<sup>9</sup> are both hydrogen;

or R<sup>6</sup> and R<sup>7</sup> or R<sup>8</sup> and R<sup>9</sup> together represent oxo;

and each R<sup>11</sup> is independently H, trifluoromethyl, (C<sub>1-6</sub>)alkyl, (C<sub>1-6</sub>)alkenyl, (C<sub>1-6</sub>)alkoxycarbonyl, (C<sub>1-6</sub>)alkylcarbonyl, aminocarbonyl wherein the amino group is optionally substituted by (C<sub>1-6</sub>)alkoxycarbonyl, (C<sub>1-6</sub>)alkylcarbonyl, (C<sub>1-6</sub>)alkenyloxycarbonyl, (C<sub>2-6</sub>)alkenylcarbonyl, (C<sub>1-6</sub>)alkyl or (C<sub>1-6</sub>)alkenyl and optionally further substituted by (C<sub>1-6</sub>)alkyl or (C<sub>1-6</sub>)alkenyl;

provided that A and B cannot both be selected from NR<sup>11</sup>, O and S(O)<sub>x</sub> and when one of A and B is CO the other is not CO, O or S(O)<sub>x</sub>.

Claims 2-11. (Cancelled)

12. (Original) A pharmaceutical composition for use in the treatment of bacterial infections in mammals comprising a compound of formula (I) as defined in claim 1, or a pharmaceutically acceptable derivative thereof, and a pharmaceutically acceptable carrier.

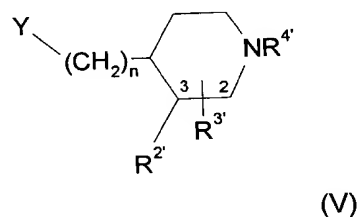
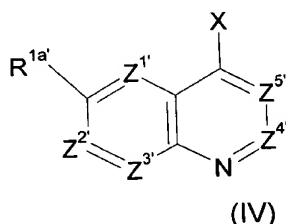
13. (Cancelled)

14. (New) A method according to claim 1 which comprises administering a compound of formula (IA) or a pharmaceutically acceptable derivative thereof which is a compound of formula (I) as defined in claim 1 wherein  $R^3$  is other than  $(C_{1-6})$ alkoxycarbonyl; optionally substituted aminocarbonyl, CN or COOH.
15. (New) A method according to claim 1 which comprises administering a compound in which  $Z^5$  is CH or N and  $Z^1-Z^4$  are each CH.
16. (New) A method according to claim 1 which comprises administering a compound in which  $R^1$  is methoxy, amino- or guanidino- $(C_{3-5})$ alkyloxy, guanidino $(C_{3-5})$ alkyloxy, piperidyl $(C_{3-5})$ alkyloxy, nitro or fluoro, and  $R^{1a}$  is hydrogen.
17. (New) A method according to claim 1 which comprises administering a compound in which  $R^3$  is in the 3-position and is  $CH_2CO_2H$  or 2-oxo-oxazolidinyl.
18. (New) A method according to claim 1 which comprises administering a compound in which  $AB(CH_2)_n$  is  $(CH_2)_3$ .
19. (New) A method according to claim 1 which comprises administering a compound in which  $R^4$  is  $(C_{5-10})$ alkyl, unsubstituted phenyl $(C_{2-3})$ alkyl or unsubstituted phenyl $(C_{3-4})$ alkenyl.
20. (New) A method according to claim 1 which comprises administering a compound in which  $Z^5$  is CH or N and  $Z^1-Z^4$  are each CH;  $R^1$  is methoxy, amino- or guanidino- $(C_{3-5})$ alkyloxy, guanidino $(C_{3-5})$ alkyloxy, piperidyl $(C_{3-5})$ alkyloxy, nitro or fluoro, and  $R^{1a}$  is hydrogen;  $R^3$  is in the 3-position and is  $CH_2CO_2H$  or 2-oxo-oxazolidinyl;  $AB(CH_2)_n$  is  $(CH_2)_3$ ; and  $R^4$  is  $(C_{5-10})$ alkyl, unsubstituted phenyl $(C_{2-3})$ alkyl or unsubstituted phenyl $(C_{3-4})$ alkenyl.
21. (New) A method according to claim 1 which comprises administering a compound which is:  
[3R, 4R]-1-Heptyl-3-(1-(R or S)-hydroxy-2-cyanoethyl)-4-[3-(6-methoxyquinolin-4-yl)propyl]piperidine;  
[3R, 4R]-1-Heptyl-3-(2-(R or S)-oxo-oxazolidin-5-yl)-4-[3-(6-methoxyquinolin-4-yl) propyl] piperidine;  
[3R, 4R]-1-Heptyl-3-(2-cyanoethyl)-4-[3-(6-methoxyquinolin-4-yl) propyl] piperidine;  
[3R, 4R]-1-Heptyl-3-(3-carboxyethyl)-4-[3-(6-methoxyquinolin-4-yl) propyl] piperidine;

[3R, 4R]-1-Heptyl-3-carboxy-4-[3-(6-methoxyquinolin-4-yl) propyl] piperidine;  
[3R, 4R]-1-Heptyl-3-(carboxymethyl)-4-[3-(6-methoxyquinolin-4-yl) propyl] piperidine;  
[3R, 4R]-1-Heptyl-3-(1-(R or S)-hydroxy-2-carboxyethyl)-4-[3-(6-methoxyquinolin-4-yl)propyl]piperidine;  
[3R, 4R]-1-Heptyl-3-(2-(E)-carboxyethenyl)-4-[3-(6-methoxyquinolin-4-yl)propyl]piperidine;  
N-(cis-3-(R/S)-Ethoxycarbonyl-1-heptyl-4-(S/R)-piperidyl)-N'-(6-methoxyquinolin-4-yl)urea;  
N-(cis-3-(R/S)-Ethoxycarbonyl-1-heptyl-4-(S/R)-piperidyl)-N'-(6-methoxy-[1,5]-naphthyridin-4-yl)urea;  
N-(cis-3-(R/S)-Aminocarbonyl-1-heptyl-4-(S/R)-piperidyl)-N'-(6-methoxy-[1,5]-naphthyridin-4-yl)urea;  
[3R, 4R]-1-Heptyl-4-[3-(R/S)-hydroxy-3-(6-methoxyquinolin-4-yl)propyl]-3-(2-(R or S)-oxo-oxazolidin-5-yl)-piperidine;  
[3R, 4R]-1-Heptyl-3-cyanomethyl-4-[3-(R/S)-hydroxy-3-(6-methoxyquinolin-4-yl)propyl]piperidine;  
[3R, 4R]-1-Heptyl-3-cyanomethyl-4-(2-(R)-hydroxy-3-(6-methoxyquinolin-4-yl)propyl]piperidine;  
N-(cis-3-(R/S)-Carboxy-1-heptyl-4-(S/R)-piperidyl)-N'-(6-methoxyquinolin-4-yl)urea;  
cis-3-(R/S)-Ethoxycarbonyl-1-heptyl-4-(S/R)-(6-methoxyquinolin-4-yl)aminocarbonyl-oxypiperidine;  
cis-3-(R/S)-Carboxy-1-heptyl-4-(S/R)-(6-methoxyquinolin-4-yl)aminocarbonyl-oxypiperidine;  
a compound 18-36 from Table 1;  
or a pharmaceutically acceptable derivative of any of the foregoing compounds.

22. (New) A process for preparing compounds of formula (IA) as defined in claim 2, or a pharmaceutically acceptable derivative thereof, which process comprises:

(a) reacting a compound of formula (IV) with a compound of formula (V):

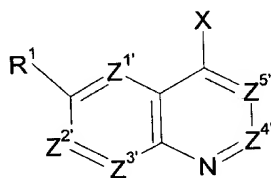


wherein Z<sup>1</sup>, Z<sup>2</sup>, Z<sup>3</sup>, Z<sup>4</sup> and Z<sup>5</sup>, m, n, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are as defined in formula (I), and X and Y may be the following combinations:

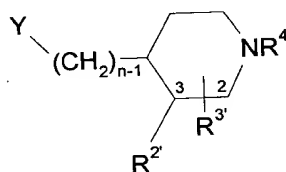
- (i) X is M and Y is CH<sub>2</sub>CO<sub>2</sub>R<sup>X</sup>
- (ii) X is CO<sub>2</sub>R<sup>Y</sup> and Y is CH<sub>2</sub>CO<sub>2</sub>R<sup>X</sup>

- (iii) one of X and Y is  $\text{CH}=\text{SPh}_2$  and the other is  $\text{CHO}$
  - (iv) X is  $\text{CH}_3$  and Y is  $\text{CHO}$
  - (v) X is  $\text{CH}_3$  and Y is  $\text{CO}_2\text{R}^x$
  - (vi) X is  $\text{CH}_2\text{CO}_2\text{R}^y$  and Y is  $\text{CO}_2\text{R}^x$
  - (vii) X is  $\text{CH}=\text{PR}^z_3$  and Y is  $\text{CHO}$
  - (viii) X is  $\text{CHO}$  and Y is  $\text{CH}=\text{PR}^z_3$
  - (ix) X is halogen and Y is  $\text{CH}=\text{CH}_2$
  - (x) one of X and Y is  $\text{COW}$  and the other is  $\text{NHR}^{11'}$  or  $\text{NCO}$
  - (xi) one of X and Y is  $(\text{CH}_2)_p\text{-V}$  and the other is  $(\text{CH}_2)_q\text{NHR}^{11'}$ ,  $(\text{CH}_2)_q\text{OH}$ ,  $(\text{CH}_2)_q\text{SH}$  or  $(\text{CH}_2)_q\text{SCOR}^x$  where  $p+q=1$
  - (xii) one of X and Y is  $\text{CHO}$  and the other is  $\text{NHR}^{11'}$
  - (xiii) one of X and Y is  $\text{OH}$  and the other is  $-\text{CH}=\text{N}_2$
- in which V and W are leaving groups,  $\text{R}^x$  and  $\text{R}^y$  are  $(\text{C}_{1-6})$ alkyl and  $\text{R}^z$  is aryl or  $(\text{C}_{1-6})$ alkyl, or
- (xiv) X is  $\text{NCO}$ , Y is  $\text{OH}$  or  $\text{NH}_2$  ;

(b) reacting a compound of formula (IV) with a compound of formula (Vb):



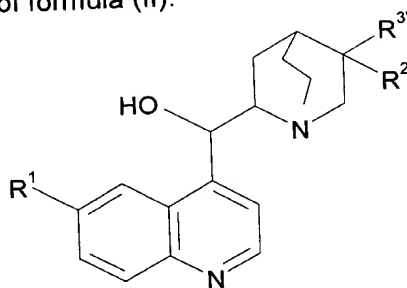
(IV)



(Vb)

wherein  $\text{Z}^1$ ,  $\text{Z}^2$ ,  $\text{Z}^3$ ,  $\text{Z}^4$  and  $\text{Z}^5$ , m, n,  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$  and  $\text{R}^4$  are as defined in formula (I), X is  $\text{CH}_2\text{NHR}^{11'}$  and Y is  $\text{CHO}$  or  $\text{COW}$  or X is  $\text{CH}_2\text{OH}$  and Y is  $-\text{CH}=\text{N}_2$ ;

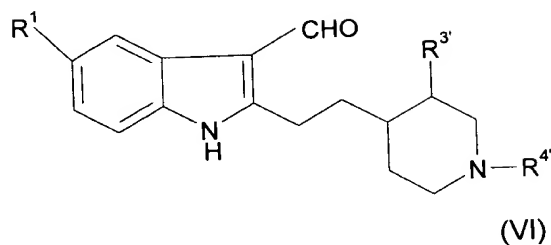
(c) rearranging a compound of formula (II):



(II)

to give a compound of formula (III) which is a compound of formula (I) where  $\text{Z}^1\text{-Z}^5$  are  $\text{CH}$ , n is 1, A-B is  $\text{COCH}_2$  and  $\text{R}^2$  is H, or a compound of formula (VII) which is a compound of formula (I) where n is 1, A-B is  $\text{CHOHCH}_2$  or  $\text{CH}_2\text{CHOH}$  and  $\text{R}^2$  is H; or

(d) photooxygenating a compound of formula (VI):



in which Z<sup>1'</sup>-Z<sup>5'</sup> are Z<sup>1</sup>-Z<sup>5</sup> or groups convertible thereto, R<sup>11'</sup>, R<sup>1'</sup>, R<sup>2'</sup>, R<sup>3'</sup> and R<sup>4'</sup> are R<sup>11</sup>, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> or groups convertible thereto, and thereafter optionally or as necessary converting R<sup>11'</sup>, R<sup>1'</sup>, R<sup>2'</sup>, R<sup>3'</sup> and R<sup>4'</sup> to R<sup>11</sup>, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup>, converting Z<sup>1'</sup>-Z<sup>5'</sup> to Z<sup>1</sup>-Z<sup>5</sup>, converting A-B to other A-B, interconverting R<sup>11</sup>, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and/or R<sup>4</sup> and forming a pharmaceutically acceptable derivative thereof.

23. (New) A pharmaceutical composition comprising a compound of formula (IA) as defined in claim 2, or a pharmaceutically acceptable derivative thereof, and a pharmaceutically acceptable carrier.

24. (New) The use of a compound of formula (I) as defined in claim 1 or a pharmaceutically acceptable derivative thereof in the manufacture of a medicament for use in the treatment of bacterial infections in mammals.